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REMARKS

Claims 16, 18, 20, 22 and 23 are rejected under 35 U.S.C. § 112, second paragraph, as being indefinite for the reasons noted in the official action. The rejected claims are accordingly amended, by the above claim amendments, and the presently pending claims are now believed to particularly point out and distinctly claim the subject matter regarded as the invention, thereby overcoming all of the raised § 112, second paragraph, rejections. The entered claim amendments are directed solely at overcoming the raised indefiniteness rejections and are not directed at distinguishing the present invention from the art of record in this case.

Claims 13-15 and 17-23 are rejected, under 35 U.S.C. § 102(b), as being anticipated by the published application of Vikman et al. '401. The Applicant acknowledges and respectfully traverses the raised anticipatory rejection in view of the following remarks.

As an initial matter, the Applicant notes that Vikman et al. '401 is exactly the state of the art electric motor driven vehicle, control system and associated drawbacks which the present invention is intended to overcome. It is known in the art that braking of such a vehicle is undertaken by reduction of the rotational speed of a motor, as noted in Vikman et al.'s abstract,

... the rotational speed of the motor is reduced according to a predetermined deceleration characteristic (a-d) when braking is activated. Preferably the deceleration characteristic is chosen in dependency of the length of depression of a brake pedal.

A thorough review of Vikman et al. '401 discloses merely that the deceleration characteristics of both a primary and a supplementary brake system are actuated solely according to a position of the brake pedal. For example in the applied reference at paragraph 0029, "[w]hen the driver depresses the brake pedal 16 a signal is delivered to the motor 6 via is the electronic control unit 24 and the motor control unit 28 to reduce the rotational speed of the motor according to a characteristic with a predetermined deceleration ... [t]he signal transmitted to the electronic

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10/539,653

control unit 24 varies dependent of how far the pedal 16 is depressed with more depression giving a steeper characteristic, which thus gives a greater deceleration and thus a more powerful braking". These "characteristic curves" are shown at FIG. 4 of Vikman et al. '401 which discloses the characteristic curves (a-d) showing the different decelerations dependent on the drivers specific depression of the brake pedal.

Vikman et al. '401 arguably shows a supplementary brake system as discussed in paragraphs 0036 and 0037 and as noted by the Examiner. Again, it is known that such a supplementary braking system, which may be an electromagnetic brake 36 as shown in the reference, is like the primary system, dependent on a particular position of the brake pedal. As noted in paragraph 0036 of Vikman et al. '401, "[w]hen the brake pedal is depressed past a first predetermined position, for instance 50% of maximum depression, a supplementary brake system is activated". In paragraph 0037, Vikman et al. '401 goes on to state at line 13, "[i]n FIG. 5 the braking force F [is] a function of the brake pedal depression x. From this it is apparent that the contribution M from the motor brake cease to increase at 50% depression of the pedal 16 and that the support wheel brake contribute with the remaining part fo the required brake torque S". In other words, Vikman et al. '401 is entirely dependent upon the position of the brake pedal, there is no disclosure, teaching or suggestion of actuation or activation of either the primary or the supplementary braking systems operating in any manner other than completely dependent as a function x of the depression of the brake pedal 16.

Turning to the present invention, the Applicant's specification clearly states that it is object of the present invention to overcome the drawbacks associated with such pedal position-dependent braking systems. These drawbacks are noted in Applicant's Background of the Invention at paragraphs [006]-[008] of the specification:

According to the state of the art, electrically-driven motor vehicles, especially industrial trucks for large lifting loads and/or great driving speeds, have hydraulically or mechanically actuated service brakes, which can be

10/539,653

controlled by the motor vehicle driver or operator. Usually the traction motor is used in addition for braking, whereby this takes place as a function of the brake pedal position.

First, the use of hydraulic braking systems requires an additional pressure medium or brake fluid in the electrically-driven motor vehicle. Moreover, the pressure medium must be changed regularly due to its hygroscopic property. In addition, braking systems of this type must be bled during installation and during servicing.

Second, the construction of simple, exclusively mechanical brake systems is not possible in each vehicle, for example, due to the necessary control cable lengths, the number of deflections, etc. Hydraulic as well as mechanical systems have a fixed characteristic curve between pedal force and/or pedal path and braking force so that it proves to be difficult to incorporate the braking action of the motor into these in order to create clear conditions for the driver.

Thus, it was, and is the Applicant's position that Vikman et al. '401 merely discloses features and the associated drawbacks which are well known in the art and which are intended to be overcome by the specific claimed features of the present claimed invention.

Importantly, the present invention includes a service brake 5 and wheel motors which inherently include a motor braking system 2. As noted in paragraph [015], "... the most effective combination of electric motor brakes and service brake is ascertained in accordance with the invention by a brake management unit or by the brake control unit depending upon the driving state". While the Applicant's system may include ascertaining the position of the brake pedal, different from the above discussed reference of Vikman et al. '401, the Applicant's claimed "driving state" also utilizes the further specifically claimed feature of ascertaining via position rotational speed sensors on the motor brakes an appropriate service brake actuation which is dependent upon the information received from these rotational speed sensors on the motor brakes. What is not disclosed, taught or suggested by Vikman et al. '401 is the specific

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10/539,653

structure and functions of the Applicant's features relating to the position rotational/speed sensors 8 as described at least at paragraph [023] of the Applicant's presently claimed invention.

Position/rotational speed sensors 8 can be used for this purpose which are, in any case, provided with AC motors whose information is also forwarded, in accordance with the invention, to the braking management unit or the braking control unit 7 for evaluation of the braking action of the electric motors 2.

This aspect of the present invention is important because by utilizing a position sensor 8 with the braking motor one can detect the relative positions of the rotor and the stator of the AC motor. If one knows the exact position from the rotor to the stator as well as the speed, it is possible to calculate the exact torque of the AC motor, the efficiency and the maximum possible torque, e.g. if the speed is high the possible torque is higher than at low speed. If you know the speed of the service brake the efficiency can be calculated along with the maximum possible torque. With this data, the brake control unit can depending on the efficiency of the motor brake and the service brake, combine the two brakes in the most effective combination.

The signals from the position/rotational speed sensor 8 of the electric motor are passed on to the brake management unit for evaluation of the braking action of the electric motor 2 and thus, the brake management unit or the brake control unit can evaluate the best way in which to actuate the service brake 5. As noted in paragraph [024], ". . . the electrically actuated service brake 5 is controlled as a function of the braking action of the traction motor or traction motors 2 ascertained by the brake control unit 7 and the specification on the part of the driver input by activation of the brake pedal 9 or a brake lever".

As the Examiner is aware, in order to substantiate an anticipation rejection under 35 U.S.C. § 102, the cited reference must disclose each and every feature of the presently claimed invention. Turning to claim 13, the Applicant points out that claim 13 specifically recites

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10/539,653

"... the electrically actuated service brake (5) being controlled as a function of braking action of the motor brake and a specification of a driver, and the braking action of the motor brake is evaluated on a basis of information from a position/rotational speed sensor (8) of the motor brake". First, Vikman et al. '401, reveals no disclosure, teaching or suggestion as required under pertinent case law of the specific features, structure and function of a position/rotational speed sensor (8) of the motor brake as recited in claim 13. Furthermore, there is no disclosure, teaching or suggestion with respect to the supplementary brake, i.e., the service brake of Vikman et al. '401 being controlled as a function of the braking action of the motor brake. Vikman et al. '401 discloses only that the braking action with the service brake or supplementary brake is controlled according to the specific position of the brake pedal.

As at least these above noted features of Applicant's claim 13 are neither disclosed, taught or suggested in any manner by the prior cited reference, the Applicant respectfully requests withdrawal of the § 102 rejection. The Applicant has added new claims 24- 32, which further clarify these inventive aspects of the present invention and are thus also believed allowable in view of the above remarks as well.

Claims 13-18 and 23 are rejected, under 35 U.S.C. § 102(b), as being anticipated by Hashiba et al. '101. The Applicant acknowledges and respectfully traverses the raised anticipatory rejection in view of the following remarks.

Similar to the above discussion regarding Vikman et al. '401, Hashiba et al. '101 fails to disclose these same specific features of Applicant's claim 13. The Official Actions states that "Hashiba et al discloses all the limitations of the instant claims including ... the electrically actuated service brake being controlled as a function of braking action of the motor brake and specification of a driver 26, and the braking action of the motor brake is evaluated on a basis of information from a positional/rotational sensor 22 of the motor brake."

10/539,653

The Applicant might agree that Hashiba et al. '101 discloses the known aspect of using a position sensor on the brake and throttle pedal for evaluating braking or acceleration behavior requested by a driver, however a review of the cited paragraphs [0019-0021] and [0035-0037] as noted by the Examiner fails to disclose any such features of the Applicant's claimed invention with regards to the position/rotational sensors of the motor brake determining a braking action, or of the service brake being controlled as a function of such braking action.

In particular, the Applicant points out that Hashiba's paragraphs [0021-0022] specifically discuss the inputs into the BCU (Braking Control Unit): "... wheel speed data 24, typically obtained from wheel speed sensors; and brake torque request data 26, obtained from any suitable sensor for sending the extent to which the driver is depressing a brake pedal ...". Perhaps most clearly, Hashiba's FIG. 1 shows the data inputs and outputs of the PCM and BCU, none of which relate in any manner to the function of braking action of a *motor brake*, or to such braking action being evaluated according to a position/rotational speed sensor of the motor brake. The Applicant points out that in regards to the "positional/rotational speed sensor 22 of the motor brake" as noted in the official action, in Hashiba et al. '101 the reference number 22 actually specifies the vehicle speed, as shown below which has little if anything to do with the position/rotational speed of a motor brake used with the vehicle.

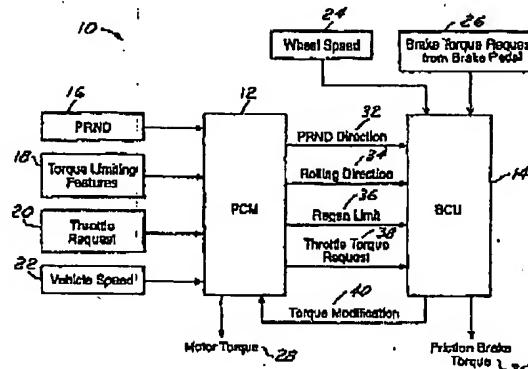


FIG.1

10/539,653

A thorough review of this cited reference fails to disclose, teach or even suggest the specifically claimed features of the present invention as recited in claim 13. If any further amendment to this application is believed necessary to advance prosecution and place this case in allowable form, the Examiner is courteously solicited to contact the undersigned representative of the Applicant to discuss the same.

In view of the above amendments and remarks, it is respectfully submitted that all of the raised anticipation rejections should be withdrawn at this time. If the Examiner disagrees with the Applicant's view concerning the withdrawal of the outstanding rejections or applicability of the Vikman et al. '401 and Hashiba et al. '101 references, the Applicant respectfully requests the Examiner to indicate the specific passage or passages, or the drawing or drawings, which contain the necessary teaching, suggestion and/or disclosure required by case law. As such teaching, suggestion and/or disclosure is not present in the applied references, the raised rejection should be withdrawn at this time. Alternatively, if the Examiner is relying on his/her expertise in this field, the Applicant respectfully requests the Examiner to enter an affidavit substantiating the Examiner's position so that suitable contradictory evidence can be entered in this case by the Applicant.

The Applicant has added new claims 24-32 which are essentially the same subject matter as claims 13-23, merely rewritten in an alternative manner to clarify the novel aspects of the present invention. The same remarks as discussed above with respect to the cited references failure to disclose each and every feature of the claimed invention also applies to Applicant's new independent claim 24 and subsequent dependent claims.

In view of the foregoing, it is respectfully submitted that the raised anticipation rejections should be withdrawn and this application is now placed in a condition for allowance. Action to that end, in the form of an early Notice of Allowance, is courteously solicited by the Applicant at this time.

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10/539,653

The Applicant respectfully requests that any outstanding objection(s) or requirement(s), as to the form of this application, be held in abeyance until allowable subject matter is indicated for this case.

In the event that there are any fee deficiencies or additional fees are payable, please charge the same or credit any overpayment to our Deposit Account (Account No. 04-0213).

Respectfully submitted,



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